RTCA Special Committee 186, Working Group 3

ADS-B 1090 MOPS

Meeting #4

ACTION ITEM 3-3

Appendix A Material for 1090 MHz ADS-B TCAS RA Broadcast

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SUMMARY

A proposal for squittering the RA broadcast was approved at Meeting #3 in Phoenix, subject to confirmation of the requirements for this transmission.

This working paper proposes change material to add the RA broadcast squitter to Appendix A. If accepted, changes will need to be developed for Sections 2.2 and 2.4 of DO-260A.

1.0 Introduction

At the Phoenix meeting, the Working Group agreed to the concept of making the contents of the TCAS air-ground Resolution Advisory (RA) downlink message (contained in aircraft register 30 Hex) available as an extended squitter broadcast.

2.0 Proposed Amendment to Appendix A

Proposed changes to add the requirements for this RA broadcast squitter are contained in the following pages.

A.4.8 Extended Squitter Aircraft Status Message

The Extended Squitter Aircraft Status Message shall be formatted as specified in Figure A-9 and Figure A-9A.

Note: Additional details are specified in the following paragraphs.

A.4.8.1 Transmission Rate and Duration

A.4.8.1.1 Emergency/Priority Status Message

The Emergency/Priority Status Message shall be broadcast once per second for the duration of the emergency

A.4.8.1.2 TCAS RA Broadcast Message

The GFM shall monitor register 30 Hex, the aircraft register used for air-ground transfer of the TCAS RA downlink message. When data is inserted in register 30 Hex, that same data shall be inserted into the TCAS RA broadcast squitter as specified in Figure A-9A. The broadcast squitter shall be transmitted at a rate of once per second for TBD seconds after an insertion into register 30 Hex. The timer shall be reset and the contents of the TCAS RA broadcast squitter updated each time that there is a new insertion in register 30 Hex.

A.4.8.2 Message Delivery

Message delivery shall be accomplished using the event driven protocol (A.4.7). The broadcast of this message shall take priority over the event driven protocol broadcast of all other message types, as specified in A.6.4.3.

If an emergency and a TCAS RA occur at the same time, each squitter type shall be transmitted at a once-per-second rate and transmission of any other event driven protocol message shall be suspended.

Figure A-9 Extended Squitter Aircraft Status
(Subtype 1: Emergency/Priority Status)

BDS 6,1

1–5	FORMAT TYPE CODE = 28
6–8	Subtype Code = 1
9–16	EMERGENCY/PRIORITY STATUS (3 bits)
17–32	RESERVED
33–40	RESERVED
41–48	RESERVED
49–56	RESERVED

Purpose. To provide additional information on aircraft status.

Subtype Coding:

0 = No Information
1 = Emergency/Priority Status
2 = TCAS RA Broadcast
3-7 = Reserved

Emergency/Priority Status Coding

Value	*Meaning*
0	No emergency
1	General emergency
2	Lifeguard/medical
3	Minimum fuel
4	No communications
5	Unlawful interference
6	Reserved
7	Reserved

Notes:

1. *Message delivery is accomplished once per second using the event driven protocol.*

2. *Termination of emergency state is detected by coding in the surveillance status field of the airborne position message.*

Figure A-9A Extended Squitter Aircraft Status (Subtype 2: TCAS RA Broadcast)

MB FIELD

1 2 3 4 5	FORMAT TYPE CODE = 28
6 7 8	Subtype Code = 2
9 10 11 12 13 14 15 16	ACTIVE RESOLUTION ADVISORIES
17 18 19 20 21 22 23 24	RACs RECORD
25 26	
27	RA TERMINATED
28	MULTIPLE THREAT ENCOUNTER
29 30	THREAT-TYPE INDICATOR
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56	THREAT IDENTITY DATA

PURPOSE: To report resolution advisories (RAs) generated by TCAS equipment.

1) Bits 9 to 56 shall be set as specified for register number 3,0 in Annex 10, Volume IV, section 4.3.8.4.2.2,

2) Bit 27 shall mean RA terminated when set to 1.

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